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Development and Testing of the Velicer Attitudes Toward Violence Scale: Evidence for a Four-Factor Model

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The factor structure of the Velicer Attitudes Toward Violence Scale [VATVS; Velicer, Huckel and Hansen, 1989] was examined in three studies. Study 1 ($n = 460$ undergraduates) found a poor fit for a hierarchical five-factor model earlier advanced by Velicer et al. [1989], but a good fit for an oblique four-factor model. In Study 2, this alternative model was cross-validated in a confirmatory factor analysis of an additional 195 undergraduate students. In Study 3, the competing models were compared in terms of ability to predict self-reported aggression, with 823 undergraduate students. The new four-factor model proved superior. Other findings included evidence of factorial invariance on the VATVS, and more favorable attitudes toward violence among men than women. The VATVS appears to measure the same four attitudinal constructs for men and women: violence in war, penal code violence, corporal punishment of children, and intimate violence. Aggr. Behav. 32:122–136, 2006. © 2006 Wiley-Liss, Inc.

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INTRODUCTION

Attitudes toward violence play an important role in a wide variety of aggressive behaviors. For example, negative attitudes toward specific racial or ethnic groups (i.e., prejudice) are associated with heightened aggression against those groups [e.g., Rogers, 1983]. Similarly, negative attitudes toward women are associated with heightened sexual and other forms of physical aggression against women [e.g., Anderson and Anderson, 1997; Malamuth, 1998]. Closely related constructs, under such labels as "hostility" or "cynicism" or "trait anger" have also been strongly implicated in aggression and violence [e.g., Barefoot, 1992; Buss and Perry, 1992; Spielberger et al., 1983].

Recently, social psychologists have become cognizant of the similarity of attitudes and other types of appraisals, such as the formation and modification of attributions and prejudice [Mackie and Smith, 1998]. In terms of the General Aggression Model [GAM; Anderson and Bushman, 2002; Anderson and Huesmann, in press; Anderson et al., 1996], attitudes toward violence can be thought of as an individual difference variable—with both affective and cognitive components—that ultimately affect appraisals of the situation and of alternative courses of action. As with attitudes in general, an understanding of an individual's attitudes toward specific types of violence enables prediction about specific behaviors [Petty and Cacioppo, 1981]. In fact, some researchers consider favorable attitudes toward violence as part of an aggressive personality syndrome that includes a well-developed network of aggression-related knowledge structures (e.g., schemas and scripts), affect, and reflexive motor responses [e.g., Anderson and Bushman, 2002; Caprara et al., 1994; Dill et al., 1997; Dodge and Crick, 1990; Epps and Kendall, 1995].

In addition, because attitudes can be modified by a variety of situational cues [Petty and Cacioppo, 1986], researchers using a multidimensional attitude toward violence scale should be able to show a link between various aggressive cues (e.g., personal insults, exposure to violent media) and attitudes

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toward engaging in specific types of violence. Furthermore, good measures of attitudes toward violence will enable researchers to evaluate the effectiveness of persuasive messages and techniques aimed at changing such attitudes. Dual-process models of persuasion [e.g., Chaiken, 1980; Petty and Cacioppo, 1986] are readily applicable in this regard.

In sum, an individual's attitudes toward violence can be thought of as evaluations of various kinds of violent behavior. For example, one might evaluate the acceptability of engaging in aggressive or violent behavior in specific interpersonal settings, such as in a dispute with one's spouse. Some efforts have been made to develop measures of attitudes toward engaging in specific types of violence, such as rape or domestic violence [e.g., Burt, 1980]. Until recently, the only attempt to develop a measure of more general attitudes toward violence was in the form of an ostensibly unidimensional scale [Bardis, 1973]. Velicer et al. [1989] developed a multidimensional inventory designed to measure attitudes toward violence in war, penal code violence, corporal punishment, extreme interpersonal violence, and intimate violence.

THE VELICER ATTITUDES TOWARD VIOLENCE SCALE

The Velicer Attitudes Toward Violence Scale [VATVS; Velicer et al., 1989] was developed as an extension of the Violence Scale developed by Bardis [1973]. The original scale was developed to assess the favorableness of individuals' evaluations of violence in general. The Violence Scale was tested on small samples of high school students, college students, and individuals from the community. Bardis [1973] found evidence that men tended to favor the use of violence more than did women, and that individuals with a college education favored violence less than individuals who had only a high school education. In addition, Bardis [1973] found that the scale was internally consistent and stable over time.

After demonstrating that the original Violence Scale measured four constructs (war, corporal punishment, penal code violence, and extreme interpersonal violence), Velicer et al. [1989] developed the VATVS by combining those items with items concerned with violence during marriage and courtship [Owens and Strauss, 1975] as well as some newly developed items. Velicer et al. [1989] tested their new scale on 360 undergraduate psychology students, and found some preliminary support from exploratory and confirmatory factor analyses for a hierarchical five-factor model of violent attitudes, described below.

The model advanced by Velicer et al. [1989] included five primary and two second-order factors. As seen in Figure 1, the five primary factors were Violence in War (e.g., "War can be just"), Penal Code Violence (e.g., "Capital punishment is often necessary"), Corporal Punishment of Children (e.g., "Children should be spanked for temper tantrums"), Extreme Interpersonal Violence (e.g., "University police should shoot students if they are demonstrating"), and Intimate Violence (e.g., "The partner is the appropriate one to take out the frustrations of the day on"). Each primary factor included three item parcels that were created by combining related items (based on prior factor analytic work). The second-order factor labeled "Institutional Violence" was related to the War, Penal Code, and Corporal Punishment factors. The second-order factor labeled "Interpersonal Violence" was related to Corporal Punishment, Extreme Interpersonal Violence, and Intimate Violence. Velicer et al. [1989] contended that the Corporal Punishment factor contained elements of Institutional Violence and Interpersonal Violence, thus implying that it should load on both second-order factors.

YOUTH VIOLENCE

The problem of youth violence in US society has been highlighted by recent school shootings in Santee, California (3/5/01), Conyers, Georgia (5/20/99), and Littleton, Colorado (4/20/99). Two common myths about youth violence in the US persist despite evidence to the contrary. First, there is widespread belief that weapons-related injuries in schools have increased dramatically in recent years. In fact, weapons-related injuries in schools have not changed much in the past 20 years [Surgeon General, 2001]. Second, many believe that the epidemic of violence by youth peaked in the early 1990s and has declined significantly since then. In fact, the prevalence of youth violence has continued to increase [Surgeon General, 2001].[1]

[1]Serious violence was defined in this study as: hit an instructor or supervisor; gotten into serious fight in school or at work; taken part in a fight where a group of your friends were against another group; hurt somebody badly enough to need bandages or a doctor (assault with injury); used a knife or gun or some other thing (like a club) to get something from a person (robbery with a weapon). Youth homicide rates have declined in recent years, largely because of a decrease in use of firearms.

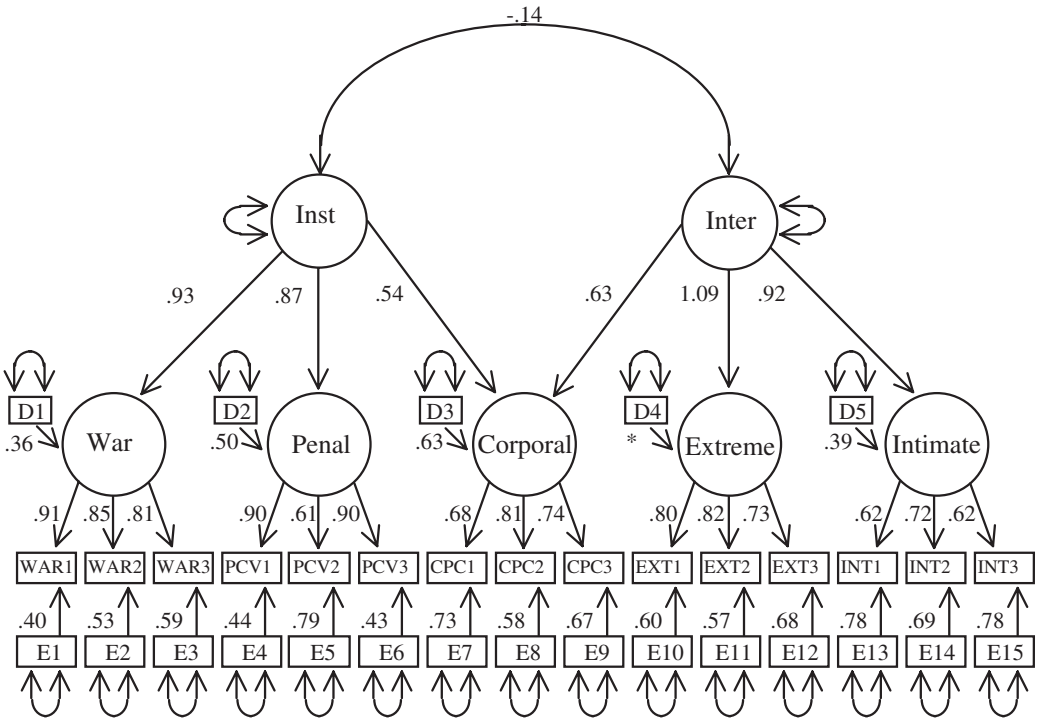

Fig. 1. Replication of Velicer et al. (1989) hierarchical five-factor model, Study 1. Notes: "Inst" = Institutional Violence; "Inter" = Interpersonal Violence; CFI = .82; RMSEA = .15.

OVERVIEW

The present studies reexamine the factor structure of the VATVS [Velicer et al., 1989], and examine correlations with measures of aggression and violence. This measure of violent attitudes was chosen for its high potential utility for research on aggression in a variety of domains. A careful examination of the five factors reported by Velicer et al. suggested to us that a number of items were misclassified. For example, one of the items classified by Velicer et al. as a "corporal punishment" item seems more conceptually related to intimate violence (Partners should work things out together even if it takes violence). Furthermore, Velicer et al. did not examine the validity of the VATVS as a predictor of aggression or violence, nor did they cross-validate the five-factor model with another sample.

We conducted three studies designed to build upon Velicer et al.'s work with a more contemporary sample. The first two studies compared the original VATVS five-factor structure with an alternative four-factor model, using confirmatory factor analysis. We also examined sex differences on the VATVS to see whether the VATVS subscales measure the same constructs for men and women and to see whether men and women differ in terms of their attitudes toward violence. In Study 3, we compared the ability of the original five-factor model and the alternative four-factor model to predict several standard self-report measures of aggressive and violent behavior.

STUDY 1

Method

Participants. Participants consisted of 460 introductory psychology students (167 women and 293 men) from the University of Missouri-Columbia, who completed the questionnaire in partial fulfillment of course requirements. One participant failed to complete the questionnaire, and was dropped from the analyses.

Questionnaire. The Velicer et al. [1989] measure of attitudes toward violence includes 46 items. Items were scored on a seven-point Likert-type scale, ranging from "Strongly Disagree" (1) to "Strongly Agree" (7). A higher score indicates a more favorable attitude toward violence. There are no reverse-scored items (see individual items in Table I).

TABLE I. Composition of Item Parcels for Final Four-Factor Model & Original Five-Factor Model

4	←Model Type: Number of Factors→	5
	Penal Code Violence	
PCV1	15) The death penalty should be part of every penal code.	PCV2
	16) Prisoners should never get out of their sentences for good behavior.	PCV1
	21) Capital punishment is often necessary.	PCV1
PCV2	9) No matter how severe the crime, one should pay with an eye for an eye and a tooth for a tooth.	PCV3
	11) Violent crimes should be punished violently.	PCV2
	42) A law enforcement officer should shoot a citizen if they are a murder suspect. * (1)	EXT2
PCV3	5) Any prisoner deserves to be mistreated by other prisoners in jail.	PCV3
	7) Prisoners should have more severe labor sentences than they do.	PCV3
	34) University police should shoot students if they are demonstrating. * (3)	EXT1
	43) University police should beat students if they are obscene. * (3)	EXT2
	Violence in War	
War1	3) Any nation should be ready with a strong military at all times.	War1
	12) Our country has the right to protect its borders forcefully.	War3
	13) The manufacture of weapons is necessary.	War1
	22) Our country should be aggressive with its military internationally.	War3
War2	1) War is often necessary.	War2
	2) The government should send armed soldiers to control violent university riots.* (3)	War2
	8) Killing of civilians should be accepted as an unavoidable part of war.	War3
	35) Every nation should have a war industry.	War1
	44) War can be just.	War1
War3	6) Violence against the enemy should be part of every nations defense.	War3
	17) Universities should use armed police against students who destroy university property.	War2
	18) It is all right for the government to stop violent outbursts in neighboring countries with our armed soldiers. * (1)	War2
	23) A violent revolution can be perfectly right.	War1
	32) Spying on our nation should be severely dealt with. * (4)	War3
	39) War in self-defense is perfectly right.	War2
	Corporal Punishment of Children	
CPC1	10) Punishing a child physically when he/she deserves it will make him/her a responsible and mature adult.	CPC3
	19) Giving mischievous children a quick slap is the best way to quickly end trouble.	CPC3
	29) An adult should beat a child with a strap or stick for being expelled.	EXT1
CPC2	24) A parent hitting a child when he/she does something bad on purpose teaches the child a good lesson.	CPC1
	30) Young children who refuse to obey should be whipped.	EXT3
	38) A teacher hitting a child when he/she does something bad on purpose teaches the child a good lesson.	CPC2
CPC3	4) Children should be spanked for temper tantrums.	CPC3
	25) A child's habitual disobedience should be punished physically.	CPC2
	36) An adult should choke a child for breaking the law. * (1)	EXT1
	Intimate Violence	
INT1	14) It is all right for a partner to choke the other if insulted or ridiculed.	EXT3
	20) It is all right for a partner to slap the other's face if insulted or ridiculed.	INT3
	27) Partners should work things out together even if it takes violence.	CPC1
	37) It is all right for a partner to shoot the other if they flirt with others.	EXT2
INT2	26) It is all right for a partner to slap the others face if challenged.	INT3
	28) The male should not allow the female the same amount of freedom as he has.	EXT2
	40) The partner is the appropriate one to take out the frustrations of the day on.	INT2
	46) The dominant partner should keep control by using violence.	EXT1
INT3	31) It is all right for a partner to choke the other if they hit a child.	EXT3
	33) It is all right to coerce ones partner into having sex when they are not willing by forcing them.	INT1
	41) It is all right for a partner to shoot the other if they are unfaithful.	EXT3
	45) It is all right to coerce one's partner into having sex when they are not willing by giving the other alcohol or drugs.	INT2

* = Item was dropped from the final four-factor model because of classification discrepancies. Number in parentheses is the number of discrepant classifications). PCV = Penal Code Violence; War = Violence in War; CPC = Corporal Punishment of Children; INT = Intimate Violence; EXT = Extreme Interpersonal Violence (fifth factor in the Velicer et al. model).

Results

Confirmatory factor analyses were computed in order to test the goodness of fit of the models to be examined. Goodness of fit was based on two indices [Hu and Bentler, 1999]. These were the comparative fit index [CFI; Bentler, 1990] and the root mean square error of approximation [RMSEA; Browne

and Cudeck, 1993]. There are no absolute guidelines for determining the adequacy of various fit indices. Early research suggested that a CFI of .90 or greater [Bentler and Bonett, 1980] or a RMSEA of .08 or less [Browne and Cudeck, 1993] indicated an acceptable fit. More recently, Hu and Bentler [1999] have suggested somewhat more stringent guidelines, specifically, a value of close to .95 for the CFI and .06 for RMSEA.

The models examined in the present study utilized item parcels. Although item parcels may be beneficial, there are currently few available published guidelines for their construction [though for exceptions see Kishton and Widaman, 1994; Marsh et al., 1998]. Marsh et al. [1998] have recently reported Monte-Carlo findings suggesting that model fit is no better when parcels are used than when the model is tested without parceling. However, it is not yet clear whether Marsh et al.' [1998] assessment of parceling holds true for real-world data, or for data in which items are skewed (as is the case in the present study). Given those caveats, parcels have been suggested because: (a) individual items are likely to violate the assumption of multivariate normality underlying the maximum likelihood procedure used in many SEM studies; (b) the use of parcels results in analyses that are not as likely to be distorted by idiosyncratic characteristics of individual items; and (c) item parcels tend to be more reliable [c.f., Byrne, 1988; Kishton and Widaman, 1994]. Thus, developing an attitudes toward violence scale and validating it with measures of aggression and of violence, using a college-age population, seems both appropriate and potentially useful.[2]

Hierarchical five-factor model. A maximum likelihood confirmatory factor analysis was computed for the hierarchical five-factor model originally advanced by Velicer et al. [1989; see Fig. 1]. The model included the 15 item parcels specified by Velicer et al. [1989] as manifest variables (see Table I), five first-order factors, and two correlated higher-order factors. The model was fit by fixing the following parameters to 1: both higher-order factors, one item parcel for each of the five first-order factors, and the error terms related to each item parcel. All other parameters were free. As can be seen in Figure 1, the fit indicators for the model suggest that this model fits the data quite poorly; CFI = .82 and RMSEA = .1472 [.1386, .1559].

Four-factor "conceptual" model. One of our concerns was the tendency for the factors in the original Velicer et al. [1989] study to include items that did not appear related to the construct they purportedly measured. Therefore, we examined the items in the measure and reassigned several items to factors based on their conceptual relatedness to a particular construct. For example, one item that was originally included in the Corporal Punishment factor (Partners should work things out together even if it takes violence) appeared to be conceptually related to intimate violence and was therefore reassigned to an item parcel representing the Intimate Violence factor in subsequent analyses. We were ultimately left with four of the original factors, as all of the items comprising the Extreme Interpersonal Violence factor were assigned to other factors. Table I also presents this four-factor model.

Although we categorized items in a way that appeared intuitively plausible, we wished to double-check that our categorization scheme would appear reasonable to individuals who were not familiar with the VATVS. To do so, we asked 10 psychology graduate students to sort all 46 VATVS items into four categories. We then noted any items for which there were disagreements as well as the number of people who disagreed for each item. Disagreements may have occurred for a number of reasons. Some items may have been classified as war-related by those who either remember the Vietnam War or who are knowledgeable about the era (e.g., "University police should shoot students if they are demonstrating"), but would otherwise be classified as penal code-related. Similarly, some items may be classified as war-related to the extent that individuals are aware of the Cold War era (e.g., "Spying on our nation should be severely dealt with"). Other discrepancies tended to involve items that could be conceptualized as either penal code or corporal punishment related (e.g., "An adult should choke a child for breaking the law"). In general, our intuitive categorization of VATVS items was in agreement with the 10 graduate students. However, there were seven items with at least one discrepancy. These are depicted in Table I with an asterisk; the number of discrepant classifications is given by the number in parentheses following the asterisk. The overall kappa for agreement among raters was .92.

Like Velicer et al. [1989], we constructed three parcels of items for each latent variable. In order to construct these parcels, an exploratory analysis at the level of individual items was computed. From

[2]One reviewer suggested rerunning the models with individual items to be sure of the results. As expected, the overall model fits were poorer with individual items than with item parcels. More importantly, the relative fits of various models remained the same in each study, with the four-factor models fitting better than the five-factor models, bolstering our original conclusions.

that analysis, the factor loadings for each of these items were examined. The parcels for each factor were created by assigning the top three items (i.e., the three items with the highest loadings) to the three parcels, followed by the next three items, and so on until all items had been assigned to item parcels.

The four latent constructs were assumed to correlate, and each latent construct was measured by three item parcels. To fit the model, the following parameters were fixed to 1: the four factors and the error terms for each item parcel. All other parameters were free. A maximum likelihood confirmatory factor analysis of this four-factor model yielded a poor fit to the data; CFI = .84 and RMSEA = .1545 [.1433, .1660].

The next analysis excluded those items in which three or more of the 10 raters disagreed about their classification. A subsequent confirmatory factor analysis with these items removed yielded a better fit; CFI = .90 and RMSEA = .1225 [.1111, .1341]. Although an improvement, the fit indices still fell outside the range of what would be considered an adequate fit.

Finally, all seven discrepant items were removed from the analysis. Factor loadings and intercorrelations among the four factors are summarized in Figure 2. The confirmatory factor analysis with the seven discrepant items removed yielded a good fit; CFI = .96 and RMSEA = .0776 [.0658, .0899]. An examination of the intercorrelations among the latent variables suggested that three of the latent variables (war, corporal punishment, penal code violence) were strongly related to each other, but that the latent variable representing intimate violence was weakly related or unrelated to the other factors. The three related variables are all representative of attitudes toward socially sanctioned violence.

The five-factor model without seven discrepant items. A final confirmatory factor analysis was computed on the original five-factor model, but with the seven discrepant items removed from their respective item parcels. Even with these items removed, the hierarchical five-factor model still fits the data poorly; CFI = .83 and RMSEA = .1348 [.1262, .1436].

Sex differences. To examine potential sex differences, *t*-tests on the four sub-scales (attitudes toward war, penal code violence, corporal punishment, and intimate violence) were computed. Men (vs. women) expressed more favorable attitudes toward violence in war (*M*'s = 3.73 vs. 2.46, $t(458) = 12.16$), penal code (*M*'s = 2.85 vs. 2.05, $t(458) = 9.34$), and corporal punishment domains (*M*'s = 3.73 vs. 2.51, $t(458) = 7.90$), (all *P*'s < .0001).

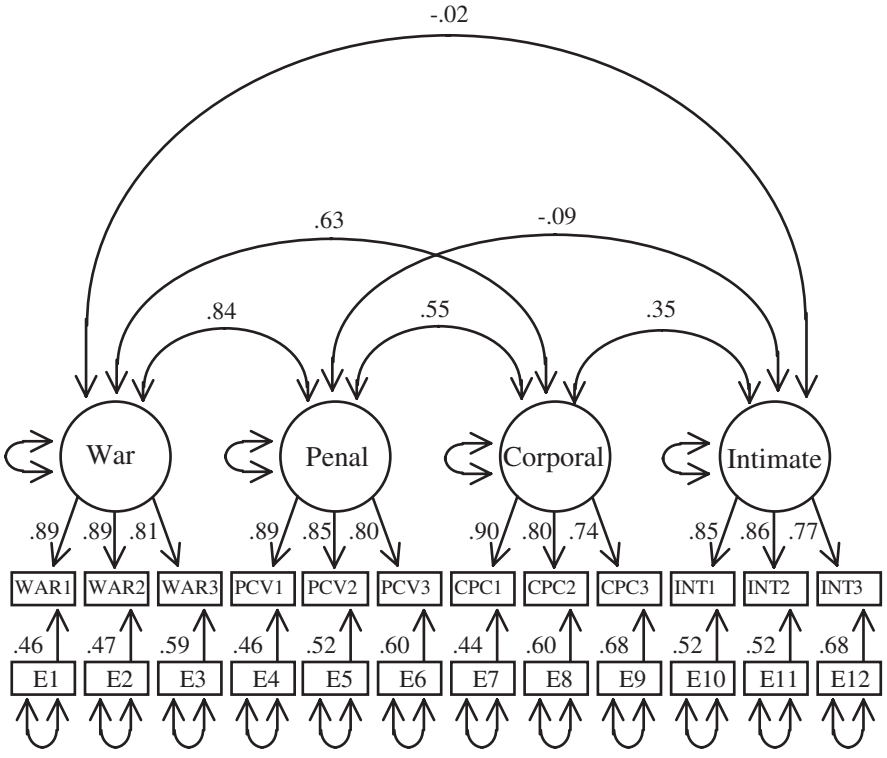

Fig. 2. Final four-factor model, Study 1. CFI = .96; RMSEA = .08.

However, attitudes toward the use of intimate violence showed no significant effect for sex, $t(458) = .16$, ns. Men and women held equally unfavorable attitudes toward intimate violence (M's = 1.92 vs. 1.91).

STUDY 2

Study 1 provided evidence that the hierarchical five-factor model does not fit the attitude structure of our contemporary college student sample, and that a four-factor model offers a plausible alternative. Study 2 was conducted to cross-validate these results. In this study, the hierarchical five-factor model and the new four-factor model were again tested to determine how well they fit the data. We expected the new four-factor model to yield a good fit, and the hierarchical five-factor model to fit poorly.

Method

Participants. Participants were 195 introductory psychology students (94 women and 101 men) from the University of Missouri-Columbia, who completed the questionnaire in partial fulfillment of course requirements. About 95% were 23 years old or younger. Males were slightly older than females (M's = 19.25 and 18.80, respectively), but not reliably so ($P > .05$). There were too few minority participants (about 8%) for meaningful comparisons.

Materials and procedure. The VATVS was identical to that used in Study 1, with one exception. A five-point Likert-type scale was used in the current study, rather than the seven-point version used in Study 1.

Results and Discussion

A maximum likelihood confirmatory factor analysis of the original five-factor model once again yielded a poor fit to the data; CFI = .90 and RMSEA = .0956 [.0810, .1104]. We also tried running the original five-factor model without the seven discrepant items. It yielded a negative Eigen value, indicating a poor fit. A confirmatory factor analysis based on the final four-factor model in Study 1 yielded a good fit to the data; CFI = .96 and RMSEA = .0630 [.0403, .0846]. Factor loadings are reported in Table II, and correlations between the factors are reported in Table III. The pattern of correlations between factors differed somewhat from those found in Study 1. Most notably, the intimate violence factor, which was essentially unrelated to the war and penal code factors in Study 1, showed a weak to moderately positive relation to the war and penal code factors in Study 2. Why this is the case is not entirely clear. Nonetheless, the final four-factor model from the previous study was replicated. In sum, the VATVS in its present form (i.e., after removing seven items from the original questionnaire) measures four latent factors.

TABLE II. Standardized Factor Loadings for Final Four-Factor Model, Study 2

	War	Corporal	Intimate	Penal
WAR1	.85			
WAR2	.80			
WAR3	.76			
CPC1		.84		
CPC2		.87		
CPC3		.79		
INT1			.79	
INT2			.82	
INT3			.74	
PCV1				.71
PCV2				.74
PCV3				.66

TABLE III. Correlations Among Latent Variables for Four-Factor Model, Study 2

	War	Corporal	Intimate	Penal
War	1			
Corporal	.47	1		
Intimate	.37	.47	1	
Penal	.54	.28	.23	1

As in Study 1, men reported more favorable attitudes toward violence than women for the war (M's = 3.14 vs. 2.59, $t(193) = 6.04$), penal code (M's = 3.31 vs. 2.93, $t(193) = 3.64$), and corporal punishment subscales (M's = 2.64 vs. 2.14, $t(193) = 4.33$), all P's $< .001$. However, unlike Study 1, men in Study 2 reported more favorable attitudes toward intimate violence than women (M's = 1.57 vs. 1.22), $t(193) = 5.74$, $P < .0001$, though the means of both men and women were generally unfavorable.

STUDY 3

Studies 1 and 2 compared the traditional five-factor model of the VATVS against the new,

conceptually based, four-factor model. Both studies demonstrated that the four-factor model yielded a better fit. In Study 3, we again sought to test the hypothesis that the four-factor model is a better fit than the five-factor model. We also administered self-report measures of behavioral aggression—the physical and verbal aggression subscales of the Buss–Perry Aggression Questionnaire [Buss and Perry, 1992] and the violence subscale of the National Youth Survey [NYS; Elliott et al., 1985]. We expected that the new four-factor model of the VATVS would predict aggressive behavior at least as well as the traditional five-factor model, despite having fewer items and fewer subscales.

Method

Participants. Participants were 823 students enrolled in introductory psychology courses at Iowa State University. Participants received extra credit in exchange for their voluntary participation. There were 498 females and 325 males. About 95% were 23 years old or younger. Females were slightly older than males (M's = 19.48 and 18.86, respectively), $F(1,806) = 13.38$, $P < .001$. There were too few minority participants (about 8%) for meaningful comparisons.

Materials. Participants completed the VATVS measure using five-point Likert-type scales. They also completed the physical and verbal aggression subscales of the Buss–Perry Aggression Questionnaire [Buss and Perry, 1992] and the violence subscale of the NYS [Elliot et al., 1985]. The Buss–Perry Aggression Questionnaire is a 29-item measure assessing physical aggression, verbal aggression, anger, and hostility. Participants indicate how characteristic each statement is of them (i.e., "If someone hits me, I hit back.") on a Likert-type scale ranging from 1 (extremely uncharacteristic of me) to 5 (extremely characteristic of me). Most relevant to the current studies are the physical and verbal aggression subscales, which assess aggressive behavior. The Buss–Perry scales have been validated in a variety of settings, yielding significant correlations with a range of objective measures of aggression such as peer-nominated aggression [Buss and Perry, 1992], penalties for aggressive hockey violations [Bushman and Wells, 1998], and laboratory measures of physical aggression [Bushman, 1995].

Participants also completed the violence subscale of the NYS [Anderson and Dill, 2000; Elliot et al., 1985; Lackey, 2003]. The NYS is a 45-item measure which assesses how frequently the respondent engages in aggressive, antisocial, and criminal behaviors. We chose to use only the violence subscale of the NYS because it is the scale most closely related to aggressive behavior. The NYS violence subscale consists of 10 statements describing aggressive behavior (i.e., "…attacked someone with the idea of seriously hurting or killing him/her"). The NYS items, and various versions of them, are among the most widely used measures of delinquency in research programs tracking shifts in antisocial behavior and in assessing intervention programs [e.g., Esbensen and Osgood, 1999]. In our version of the scale, participants indicate how often they have engaged in the behavior within the past year using an 11-point scale. The scale is anchored at 1 (0 times in the last year) and 11 (more than 27 times in the last year), with the intermediate responses increasing in intervals of 3 (i.e., 1–3 times in the last year, 4–6 times in the last year).[3]

Procedure. Participants completed the VATVS, the Buss–Perry physical and verbal aggression subscales, and the NYS violence scale as part of a battery of questionnaires administered during large mass-testing sessions. Participants were assured their responses would be confidential.

RESULTS

Preliminary analyses

Sex differences. Independent groups t-tests were used to assess gender difference on the VATVS subscales, Buss–Perry physical and verbal aggression scales, and the NYS violence scale. Men held more favorable attitudes toward violence than woman for each subscale: War M's = 3.03 vs. 2.64, $t(458) = 8.78$; Penal code violence M's = 2.92 vs. 2.72, $t(458) = 3.68$; Corporal punishment of children M's = 2.26 vs. 1.81, $t(458) = 9.08$; Intimate violence M's = 1.56 vs. 1.26, $t(458) = 7.85$, all P's $< .001$. Men also reported behaving more aggressively than woman on the Buss–Perry physical (M's = 3.15 vs. 2.58, $t(458) = 9.67$) and verbal (M's = 3.79 vs. 3.23, $t(458) = 7.16$) subscales, and for the NYS violence scale (M's = .16 vs. −.10, $t(458) = 4.40$), all P's $< .001$.

Comparison of the VATVS four- and five-factor models. We conducted confirmatory factor analyses to compare the VATVS four- and five-factor models. As in Studies 1 and 2, a confirmatory factor analysis based on the four-factor model yielded an

[3]The NYS violence subscale score was computed using standardized scores, because the item variances were so different (Anderson and Dill, 2000).

acceptable fit to the data; CFI = .94 and RMSEA = .0927 [.0844, .1011]. Figure 3 presents this model.

We were unable to fit the original five-factor model using confirmatory factor analysis, because it yielded negative Eigen values, thus demonstrating poor fit to the data. We also tried running the original five-factor model without the seven discrepant items. It also yielded negative Eigen values. Thus, the four-factor model again fits the data better than the original five-factor model.

Assessing factorial invariance of VATVS

One important question is whether the mean sex differences on the four VATVS sub-scales are due simply to the general tendency for men to favor the use of violence to a greater degree than women, or if men and women interpret items from the VATVS differently. Systematic differences in participants' interpretation of a scale as a function of group (e.g., sex) can influence interpretability of findings. One way to detect these differences is to examine the factorial invariance of the scale, i.e., the similarity in relationship between items (or item parcels) and factors across groups. Basically, this tests the hypothesis that the model fits different populations equally well [see, e.g., Bentler, 1995; Marsh and Hocevar, 1985]. Invariance was tested by computing two confirmatory factor analyses, one in which factor loadings were allowed to vary between men and women, the other constraining the factor loadings to be equal for men and women. Generally, if there is no significant difference in the fit of constrained vs. unconstrained models, then the contention that there are no sex differences in interpretation of VATVS items is strengthened. If there is a discrepancy, then further models can be run to identify the source. For instance, one item parcel may load more strongly on a latent construct for males than females.

Studies 1 and 2. To allow for a sufficient sample size, the data from studies 1 and 2 were combined, after standardizing each variable within each study. The resulting correlation matrices (one for males, one for females) were then examined for factorial invariance. There were two reasons for this procedure. First, the two data sets used different response scales (i.e., 1–7 in Study 1, 1–5 in Study 2). Second, by analyzing the correlation matrices we avoided the potential problem of finding significant differences in factor structure due only to differences between men and women in their variability of responses to particular items.

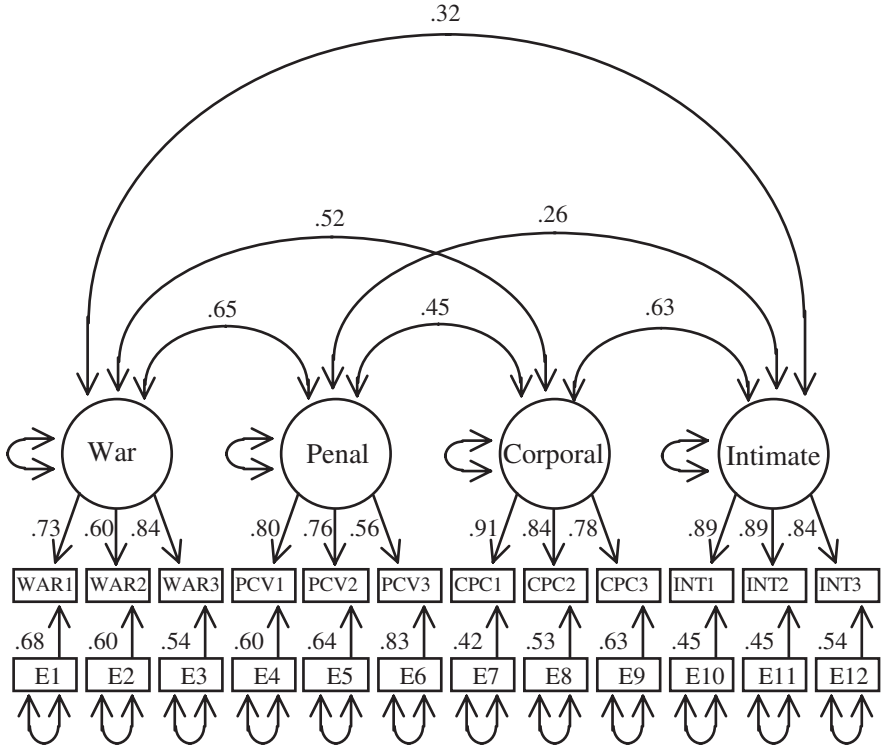

Fig. 3. Replication of four-factor model, Study 3. CFI = .94; RMSEA = .09.

TABLE IV. Tests of Factorial Invariance on the VATVS for Men and Women

Factor loading constraints	df	χ^2	χ^2 difference from *All free* (df)	cfi
Studies 1 and 2 combined				
All free	97	292		.97
All fixed	105	318	26*(8)	.96
All fixed except War1	104	302	10 (7)	.97
Study 3				
All free	97	486		.95
All fixed	105	522	36*(8)	.94
All fixed except War1	104	494	8 (7)	.95

*$P < .05$.

The results are in the top half of Table IV. The overall fit of all models was in the acceptable range. The χ^2 difference tests showed a significant difference in fit between the unconstrained model and the model in which the factor loadings were constrained χ^2 $(8) = 26$, $P < .05$. Examination of modification indexes suggested freeing the factor loading between the War1 parcel and the latent War construct. The difference in fit between this model and the model in which all factor loadings were unconstrained was not statistically significant, χ^2 $(7) = 10$. The War1 parcel loading for males (1.06) was somewhat larger than for females (.79), but clearly was in the same direction.

Study 3. The bottom half of Table IV displays the results of tests of factorial invariance for men and women from Study 3. The results are essentially the same as for Studies 1 and 2. Specifically, the factor loadings were essentially the same for men and women, except the War1 parcel loaded more strongly for males (1.13) than for females (.76). Overall, the four-factor model fits the data for both men and women pretty well.

VATVS and aggressive behavior

The main analyses tested whether the theoretically based four-factor model could predict aggressive behavior at least as well as the five-factor model. Because the four-factor model is theoretically cleaner, simpler, and structurally more sound than the five-factor model, it is not necessary for it to have higher predictive validity than the five-factor model in order to be the preferred instrument. It merely needs to predict as well as the five-factor model.

Scale reliabilities. The first step was to examine the coefficient alpha reliabilities of all scales used in this study (four- and five-factor attitude scales and the three aggressive behavior measures) to see whether any subsequent differences in predictive power might be the result of systematic differences in measurement reliability. All were acceptably high for the regression analyses reported in the next paragraphs. The lowest reliability coefficient was .79 for Buss–Perry verbal aggression. The highest was .90 for the five-factor subscale of Extreme violence.

Next, a series of stepwise regression analyses using the maximum R^2 method were run to determine which VATVS subscales best predicted scores on the Buss–Perry physical and verbal aggression subscales and the NYS violence subscale. The same analyses were also run on a composite aggression variable, created by standardizing and then averaging scores on the three aggression measures. Regression analyses were run for both the four- and five-factor VATVS models. The results of the regression analyses, including beta weights and proportion of variance explained, are presented in Table V. Overall, the theoretically based four-factor model predicted self-reported aggressive behavior better than the original five-factor model. With respect to the four-factor model, war, corporal punishment, and intimate violence each uniquely accounted for a significant portion of the variance for at least one aggression measure when all four VATVS subscales were in the model.

NYS violence. Scores on the NYS violence scale can be as well predicted by the intimate violence subscale of the four-factor VATVS as by any combination of predictors. It accounted for 11% of the variance in NYS violence scores. The addition of the other three subscales (war, penal code violence, and corporal punishment) into the model did not substantially increase the overall proportion of variance explained.

Results were similar using the original five-factor model. Again, intimate violence served as the best predictor, explaining 10% of the variance. The addition of the other four subscales (extreme, war, penal code violence, and corporal punishment) did not increase the overall proportion of variance explained.

Buss–Perry physical aggression. Scores on the Buss–Perry physical aggression subscale can best be predicted by scores on the war, corporal punishment, and intimate violence subscales of the four-factor VATVS. By itself, the war subscale accounted for 15% of the variance. Adding corporal punishment and intimate violence increased the proportion

TABLE V. Regression Analysis of VATVS four- and five-Factor Models as Predictors of Self-Reported Aggression on Buss–Perry Physical and Verbal Aggression Scales and the NYS Violence Scale

Model/# of predictors		NYS violence	Buss–Perry physical	Buss–Perry verbal	Aggression composite
Four-factor/1 variable	R^2	.11	.15	.04	.13
	Predictor 1	Intimate ($B = .51$)*	War ($B = .70$)*	War ($B = .38$)*	Intimate ($B = .52$)*
Five-factor/1 variable	R^2	.10	.15	.04	.13
	Predictor 1	Intimate ($B = .39$)*	War ($B = .70$)*	War ($B = .38$)*	Extreme ($B = .53$)*
Four-factor/2 variable	R^2	.11	.21	.06	.19
	Predictor 1	Intimate ($B = .43$)*	War ($B = .50$)*	War ($B = .28$)*	Intimate ($B = .43$)*
	Predictor 2	War ($B = .02$)	Corporal ($B = .41$)*	Corporal ($B = .18$)*	War ($B = .30$)*
Five-factor/2 variable	R^2	.10	.20	.05	.18
	Predictor 1	Intimate ($B = .22$)*	War ($B = .50$)*	War ($B = .28$)*	Extreme ($B = .43$)*
	Predictor 2	Extreme ($B = .22$)*	Corporal ($B = .38$)*	Corporal ($B = .19$)*	War ($B = .31$)*
Four-factor/3 variable	R^2	.11	.23	.06	.20
	Predictor 1	Intimate ($B = .43$)*	War ($B = .49$)*	War ($B = .28$)*	Intimate ($B = .34$)*
	Predictor 2	War ($B = .06$)	Corporal ($B = .27$)*	Corporal ($B = .18$)*	War ($B = .25$)*
	Predictor 3	Penal ($B = -.02$)	Intimate ($B = .34$*)	Intimate ($B = .02$)	Corporal ($B = .12$)*
Five-factor/3 variable	R^2	.10	.22	.05	.19
	Predictor 1	Intimate ($B = .22$)*	War ($B = .50$)*	War ($B = .26$)*	Extreme ($B = .35$)*
	Predictor 2	Extreme ($B = .20$)*	Corporal ($B = .38$)*	Corporal ($B = .17$)*	War ($B = .25$)*
	Predictor 3	War ($B = .04$)	Extreme ($B = .36$)*	Extreme ($B = .06$)	Corporal ($B = .12$)*
Four-factor/4 variable	R^2	.11	.23	.06	.20
	Predictor 1	Intimate ($B = .43$)*	War ($B = .43$)*	War ($B = .28$)*	Intimate ($B = .34$)*
	Predictor 2	War ($B = .06$)	Corporal ($B = .25$)*	Corporal ($B = .18$)*	War ($B = .25$)*
	Predictor 3	Penal ($B = -.02$)	Intimate ($B = .33$)*	Intimate ($B = .02$)	Corporal ($B = .12$)*
	Predictor 4	Corporal ($B = .006$)	Penal ($B = .10$)*	Penal ($B = .01$)	Penal ($B = .01$)
Five-factor/4 variable	R^2	.10	.22	.05	.20
	Predictor 1	Intimate ($B = .22$)*	War ($B = .43$)*	War ($B = .26$)	Extreme ($B = .35$)*
	Predictor 2	Extreme ($B = .21$)*	Corporal ($B = .25$)*	Corporal ($B = .18$)	War ($B = .25$)*
	Predictor 3	War ($B = .06$)	Extreme ($B = .35$)*	Extreme ($B = .13$)	Corporal ($B = .11$)*
	Predictor 4	Penal ($B = -.02$)	Penal ($B = .10$)*	Intimate ($B = -.09$)	Intimate ($B = .11$)
Five-factor/5 variable	R^2	.10	.22	.05	.20
	Predictor 1	Intimate ($B = .22$)*	War ($B = .43$)*	War ($B = .25$)	Extreme ($B = .25$)*
	Predictor 2	Extreme ($B = .22$)*	Corporal ($B = .24$)*	Corporal ($B = .17$)	War ($B = .25$)*
	Predictor 3	War ($B = .07$)	Extreme ($B = .31$)*	Extreme ($B = .14$)	Corporal ($B = .11$)*
	Predictor 4	Penal ($B = -.02$)	Penal ($B = .10$)*	Intimate ($B = -.09$)	Intimate ($B = .11$)
	Predictor 5	Corporal ($B = -.02$)	Intimate ($B = .05$)	Penal ($B = .02$)	Penal ($B = .01$)

*$P < .05$, $N = 817$.

of variance explained to 21% and 23%, respectively. The addition of penal code violence did not increase the proportion of variance explained beyond 23%.

For the five-factor model, war and corporal punishment again served as the two best predictors, explaining 20% of the variance. The third best predictor was extreme violence, which increased the proportion of variance explained to 22%. The addition of penal code violence and intimate violence did not increase the proportion of variance explained.

Buss–Perry verbal aggression. The VATVS did not predict scores on the Buss–Perry verbal aggression subscale as well as it did on the physical aggression measures. For the four-factor model, attitudes toward war served as the best predictor, accounting for 4% of the variance. The addition of corporal punishment increased that amount to 6%. The addition of

intimate and penal code violence did not appreciably increase the proportion of variance explained.

With respect to the five-factor model, war, corporal punishment, and extreme violence accounted for 5% of the variance in verbal aggression scores. The addition of intimate and penal code violence did not substantially increase the proportion of variance explained.

Aggression composite. The three measures of aggression correlated modestly but significantly with each other. Buss–Perry physical aggression correlated .31 with NYS violence and .44 with verbal aggression, both highly significant (P's $< .001$). The verbal and NYS violence measures yielded a small but significant correlation, $r(862) = .13$, $P < .0001$.

For the four-factor model, the best predictor of aggression was the intimate violence subscale, which accounted for 13% of the variance. Adding war and corporal punishment increased the variance explained to 19% and 20%, respectively. The penal code subscale did not significantly increase the amount of variance explained.

The best predictor of aggression from the five-factor model was the extreme violence subscale, accounting for 13% of the variance. Adding the war and the corporal punishment subscales significantly increased the amount of variance explained to 18% and 19%, respectively. Neither the intimate nor the penal code violence subscales added significantly.

Four-factor vs. five-factor model predictions. To further explore the relative strengths of the four- and five-factor model subscales, we ran stepwise regressions in which the best 1, 2, 3, 4 and 5 predictor models were selected based on maximizing R^2, with all nine VATVS subscales as potential predictors of the aggression composite measure. Only three predictors contributed statistically significant unique increments. All were from the four-factor model. Specifically, the intimate violence, war, and corporal punishment subscales from the four-factor model accounted for 20% of the variance in aggression scores, $F(3, 813) = 67.84$, $P < .001$. No other subscales from either the four- or the five-factor model contributed significant unique increments, all F's < 1.

Finally, we ran a model which first entered the three five-factor subscales that had added significantly to the prediction of aggression (i.e., the five-factor/three-variable model in Table V), and then added the best four-factor model subscale (intimate violence). This four-factor subscale still added significantly to the prediction of aggressive behavior, $F(1, 812) = 4.33$, $P < .04$.

DISCUSSION

Results from the present analyses suggest that the VATVS measures four latent constructs. Four factors (War, Penal Code Violence, Corporal Punishment, and Intimate Violence) from the original Velicer et al. [1989] study remained in the present analyses, though with somewhat different item compositions. Items from the Extreme Interpersonal Violence factor from the Velicer et al. [1989] study were reassigned to the other factors, and items that did not clearly fit any of the factors were dropped.

One of our concerns about the original five-factor model was that items comprising the item parcels did not seem to be conceptually related to their respective latent constructs. Thus, one purpose of our studies was to test a model that was both conceptually and statistically plausible. Parcels used in the final model were constructed with the following question in mind: Could a reasonable case be made that item X represents construct Y? In doing so, we discovered that the items forming parcels for the Extreme Interpersonal Violence scale in the original Velicer et al. [1989] model could reasonably be said to belong to one of the other latent constructs measured by the instrument. The resulting model (see Fig. 2) was one in which the relationship of items to latent factors made sense from a conceptual standpoint and fit the data reasonably well. Studies two and three confirmed the superiority of the four-factor model on empirical grounds.

Another purpose was to examine the validity of these attitudes towards violence scale by seeing whether it could predict self-reported aggression and violence in a large sample cross-sectional study. Our four-factor model did very well in predicting physical aggression (Multiple $R = .48$) and violence (Multiple $R = .33$). It also successfully predicted verbal aggression, though at a more modest level (Multiple $R = .24$).

It is interesting to note that only the intimate violence subscale of our revised four-factor model was needed to predict self-reported violent behavior. The other attitudes toward violence subscales (war, penal code, and corporal punishment of children) do not have behavioral representatives on the NYS violence scale; most of the NYS items describe violence directed at peers, parents, or teachers. Thus, this specificity makes sense.

Of course, as shown in Table V there was little specificity in the prediction of physical aggression as measured by the Buss–Perry subscale. All four

attitude subscales contributed unique increments. Why this is so is not obvious from an examination of the physical aggression items, though the fact that none of them directly refer to family, peers, or teachers may be a partial explanation.

One obvious question concerns why the original five-factor model fared so poorly. We believe that part of the answer lies in the passage of time and the resulting shifts in meaning in some of the items. To our participant population the Vietnam War, college student anti-war demonstrations, and the Cold War are dim, historical blips, rather than the vivid events and memories of Velicer et al.'s participants. In addition, the lack of a cross-validation study in the Velicer et al. article may have allowed the original parcel-selection procedure to capitalize on chance. In any case, our findings illustrate the importance of periodic updating and validation studies of "standard" attitude scales, especially when the attitude domain is one in which major social events have transpired [e.g., Carnagey and Anderson, in preparation].

Our results also showed that men hold more favorable attitudes toward engaging in the violent behaviors than do women. This sex difference was reliable for all four constructs measured by the VATVS. Finally, the VATVS factor structure appeared invariant across men and women at the latent construct level, and largely invariant at the measurement level with the exception that one set of the War items was more important for men than women. The mean sex differences on the sub-scales are apparently not due to differences in the meaning of the constructs for men and women. All in all, these findings are perhaps not too surprising given that men and women differ in their propensity to engage in violent behavior. Engaging in violence may be more efficacious for men than for women, hence, making such behavior appear more attractive for men.

Future research could be profitably aimed in several directions. First, the existence of multidimensional attitudes toward violence questionnaire enables researchers the flexibility to validate the scale in a variety of ways. Some research has examined correlations between the original five-factor model and measures of dispositional aggressiveness [e.g., Dill et al., 1997]. Similar research should be done between the new four-factor model and various measures of aggressive dispositions, such as trait irritability [e.g., Caprara et al., 1985]. Our Study 3 moves the field somewhat in this direction.

Second, the revised VATVS measures provide a useful tool for attitudes researchers. For example, additional work is needed on how attitudes and other individual differences combine to form an aggressive personality type is needed, as well as research on how attitudes toward violence fit with more general personality structures such as the Big 5.

Third, the validity of the VATVS can be further tested by examining the role of specific facets of the VATVS on specific types of behavior. For example, the GAM [Anderson and Bushman, 2002; Anderson and Huesmann, in press; Anderson et al., 1996] predicts that one's attitude towards the use of intimate violence should be related to one's propensity to engage in domestic violence against a spouse, child, or significant other. Study 3 provided one such test, and found that violence directed against one's peers, parents, and teachers was highly correlated with violent attitudes toward intimates. Additional work along this line is needed, especially studies that examine the predictive validity of the VATVS subscales using behavioral measures that are not self-reports. For example, it would be useful to examine the relation between attitudes toward corporal punishment of children and punishment choices by parents, or the relation between war attitudes and participation in war protests and counter-protests.

The face validity of the items and the lack of reverse scored items suggest some alternative explanations for our findings. The results may, for example, reflect a tendency of participants to use stereotyped response sets to the items rather than actual attitudes toward violence. In addition, the possibility that participants responded in a socially desirable manner cannot be directly ruled out. However, the fact that Velicer et al. [1989] found no evidence of a link between social desirability and participants' scores on the VATVS argues against that particular alternative explanation. Similarly, responses to items on several of the subscales may reflect individual differences in ideology or dogmatism rather than endorsements of the use of violence per se. Future research should test for this possibility. The fact that the attitude subscales reliably predicted three very different measures of aggression (i.e., the Buss–Perry subscales and the NYS violence subscale) also argues against these alternative explanations.

The extent to which these attitudes toward violence represent stable dispositions has yet to be directly examined. One useful research direction would be to examine changes in individuals' scores

on the VATVS over time, as well as the extent to which the factor structure of the VATVS is invariant over time. Another direction would be to test whether certain types of life events (e.g., repeated exposure to violent entertainment media, the September 11, 2001 terrorists attacks) or certain types of specific interventions (e.g., date rape programs presented to college students) have a significant and lasting impact on attitudes toward violence. In addition, experimental research could examine the role of a number of situational factors that may result in short-term fluctuations on participants' attitudes toward violence. The current VATVS enables researchers interested in attitude change to examine the role of persuasive messages designed to increase or decrease the favorability of attitudes toward various forms of violence, as well as to examine the role of aggression-related cues (e.g., video game violence) on subsequently held attitudes toward engaging in violence. Such research would contribute to our understanding of the psychological underpinnings of aggressive behavior.

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REFERENCES

Anderson CA, Bushman BJ. 2002. Human aggression. Annu Rev Psychol 53:27–51.

Anderson CA, Dill KE. 2000. Video games and aggressive thoughts, feelings, and behavior in the laboratory and in life. J Pers Soc Psychol 78:772–790.

Anderson CA, Huesmann LR. 2003. Human aggression: A social–cognitive view. In Hogg MA, Cooper J (eds): "Handbook of Social Psychology." London: Sage Publications pp 296–323.

Anderson CA, Anderson KB, Deuser WE. 1996. A general framework for the study of affective aggression: Effects of weapons and extreme temperatures on accessibility of aggressive thoughts, affect, and attitudes. Pers Soc Psychol Bull 22:366–376.

Anderson KB, Anderson CA. 1997. The predictive specificity of hostility toward women for male-on-female vs. male-on-male aggression. Presented at the Annual Convention of the Midwestern Psychological Association, Chicago, May.

Bardis PD. 1973. Violence: Theory and quantification. J Polit Mil Sociol 1:121–146.

Barefoot JC. 1992. Developments in the measurement of hostility. In Friedman H (ed): "Hostility, Coping, and Health." Washington, DC: American Psychological Association, pp 13–31.

Bentler P. 1995. "EQS: Structural Equations Programming Manual." Encino, CA: Multivariate Software.

Bentler PM. 1990. Comparative fit indices in structural models. Psychol Bull 107:238–246.

Bentler PM, Bonett DG. 1980. Significance tests and goodness-of-fit in the analysis of covariance structures. Psychol Bull 88:588–600.

Browne MW, Cudeck R. 1993. Alternative ways of assessing model fit. In Bollen K, Long J (eds): "Testing Structural Equation Models." Newbury Park, CA: Sage, pp 136–162.

Burt M. 1980. Cultural myths and supports for rape. J Pers Soc Psychol 38:217–230.

Bushman BJ. 1995. Moderating role of trait aggressiveness in the effects of violent media on aggression. J Pers Soc Psychol 69:950–960.

Bushman BJ, Wells GL. 1998. Trait aggressiveness and hockey penalties: Predicting hot tempers on the ice. J Appl Psychol 83:969–974.

Buss AH, Perry M. 1992. The aggression questionnaire. J Pers Soc Psychol 63:452–459.

Byrne BM. 1988. Measuring adolescent self-concept: Factorial validity and equivalency of the SDQ III across gender. Multivariate Behav Res 23:361–375.

Caprara GV, Cinanni V, D'Imperio G, Passerini S, Renzi P, Travaglia G. 1985. Indicators of impulsive aggression: Present status of research in irritability and emotional susceptibility scales. Pers Individ Diff 6:665–674.

Caprara GV, Perugini M, Barbaranelli C. 1994. Studies of individual differences in aggression. In Portegal M, Knutson JF (eds): "The Dynamics of Aggression: Biological and Social Processes in Dyads and Groups." Hillsdale, NJ: Erlbaum, pp 123–153.

Carnagey NL, Anderson CA. in review. Changes in aggressive behavior and attitudes towards violence as a result of the September 11, 2001, terrorist attacks in the US.

Chaiken S. 1980. Heuristic versus systematic information processing and the use of source versus message cues in persuasion. J Pers Soc Psychol 39:752–756.

Dill KE, Anderson CA, Anderson KB, Deuser WE. 1997. Effects of aggressive personality on social expectations and social perceptions. J Res Pers 31:272–292.

Dodge KA, Crick NR. 1990. Social information-processing bases of aggressive behavior in children. Pers Soc Psychol Bull 16:8–22.

Elliot DS, Huizinga D, Ageton SS. 1985. "Explaining Delinquency and Drug Use." Beverly Hills, CA: Sage.

Epps J, Kendall PC. 1995. Hostile attribution bias in adults. Cognitive Ther Res 19:159–178.

Esbensen F, Osgood DW. 1999. Gang Resistance Education and Training (GREAT): Results from the national evaluation. J Res Crime Delinquency 36:194–225.

Hu L, Bentler PM. 1999. Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. Struct Eq Model 6:1–55.

Kishton JM, Widaman KF. 1994. Unidimensional versus domain representative parceling of questionnaire items: An empirical example. Educ Psychol Meas 54:757–765.

Lackey C. 2003. Violent family heritage, the transition to adulthood, and later partner violence. J Fam Issues 24:74–98.

Mackie DM, Smith ER. 1998. Intergroup relations: Insights from a theoretically integrative approach. Psychol Rev 105:499–529.

Malamuth NM. 1998. The confluence model as an organizing framework for research on sexually aggressive men: Risk moderators, imagined aggression, and pornography consumption. In Geen R, Donnerstein E (eds): "Human Aggression: Theories, Research, and Implications for Social Policy." San Diego, CA: Academic Press, pp 230–247.

Marsh HW, Hocevar D. 1985. Application of confirmatory factor analysis to the study of self-concept: First and higher order factor models and their invariance across groups. Psychol Bull 97:562–582.

Marsh HW, Hau K, Balla JR, Grayson D. 1998. Is more ever too much? The number of indicators per factor in confirmatory factor analysis. Multivariate Beh Res 33:181–220.

Owens DJ, Strauss MA. 1975. The social structure of violence in childhood and approval of violence as an adult. Aggr Behav 1:193–211.

Petty RE, Cacioppo JT. 1981. "Attitudes and Persuasion: Classic and Contemporary Approaches." Dubuque, IA: William C. Brown.

Petty RE, Cacioppo JT. 1986. "Communication and Persuasion: Central and Peripheral Routes to Attitude Change." New York: Springer-Verlag.

Rogers RW. 1983. Race variables in aggression. In Geen R, Donnerstein E (eds): "Aggression: Theoretical and Empirical Reviews," Vol. 2. New York: Academic Press, pp 27–50.

Spielberger CD, Jacobs G, Russell S, Crane RS. 1983. Assessment of anger: The state-trait scale. In Butcher J, Spielberger C (eds). "Advances in Personality Assessment," Vol. 2. Hillsdale, NJ: Erlbaum Associates, pp 161–189.

Surgeon General. 2001. "Youth Violence: A Report of the Surgeon General." Washington, DC: US Department of Health and Human Services.

Velicer WF, Huckel LH, Hansen CE. 1989. A measurement model for measuring attitudes toward violence. Pers Soc Psychol Bull 15:349–364.

Reliabilities of scales in Study 3 (dropped from the published version to meet space limitations).

Internal reliabilities/# of items for the ATVS 4-factor and 5-factor scales, Buss-Perry physical & verbal aggression scales, and NYS violence scale, Study 3.

Measure	War	Penal code	Corporal	Intimate	Extreme	BP-Physical	BP-Verbal	NYS
4-factor	.84/12	.80/7	.87/8	.91/12	n/a	.85/9	.79/5	.88/10
5-factor	.86/15	.80/7	.86/7	.82/5	.90/12			